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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,049	01/22/2004	Harriet L. Robinson	07917-217002	3662

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EXAMINER
LONG, SCOTT

ART UNIT	PAPER NUMBER
1633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/763,049	ROBINSON ET AL.	
	Examiner	Art Unit	
	Scott D. Long	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-8,11-23,25-27,30-35,37-39,42,43 and 52-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-8,11-23,25-27,30-35,37-39,42,43 and 52-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The examiner acknowledges the submission of Remarks, Amended claims, and IDS forms.

Restriction/Election

The examiner apologizes to the applicant for the contradiction between the text of the previous action (9/25/2006) and the Office Action Summary of the previous action. The examiner reiterates that he has rejoined all the groups and withdrawn the restriction requirement. The examiner thanks the applicant for responding to all of the rejections covering all of the initial claims.

Claim Status

Claims 1-4, 6-8, 11-23, 25-27, 30-35, 37-39, 42-43, 52-56 are pending. Claims 1-4, 6-8, 12-19, 23, 25-27, 32-35, 38, 52-53 have are amended. Claims 5, 9-10, 24, 28-29, 36, 40-41, and 44-51 are canceled. Claims 1-4, 6-8, 11-23, 25-27, 30-35, 37-39, 42-43, 52-56 are under current examination.

Information Disclosure Statement

The Information Disclosure Statements (IDS) filed on 6 March 2007 consisting of 5 sheet(s) are in compliance with 37 CFR 1.97. Accordingly, examiner has considered the Information Disclosure Statements. In addition, the examiner has reviewed the parental applications for references not submitted with the instant application and has initialed the PTO-1449 accordingly, as having properly submitted the references.

Priority

This application claims benefit from as a CON of 08/187,879 filed on 01/27/1994 (US-PAT 6,841,381), which is a CIP of 08/009,833 filed on 01/27/1993 (US-PAT 5,643,578), which is a CIP of 07/855,562 filed 03/23/1992 (ABN). The instant application has been granted the benefit date, 23 March 1992, from the application 07/855,562. However, the parent, US-PAT 5,643,578, does not have benefit of (1) retroviral promoter, (2) SIV antigen, (3) rotavirus antigen, (4) microsphere encapsulation of DNA, (5) methods of immunization comprising combinations of influenza antigens. Therefore these limitations will be given the benefit of US-PAT 6,841,381, filed on 27 January 1994.

Response to Arguments - Claim Rejections 35 USC § 112

Response to Arguments – ENABLEMENT (35 USC 112, first paragraph)

Applicant's arguments, see REMARKS, page 9 and Claim amendments, filed 26 February November 2007, with respect to Rejections based on Scope of Enablement for Plasmid Vectors has been made moot by the claim amendments, in particular. Therefore the examiner withdraws this portion of his Rejection against claims 1-56.

Applicant's arguments, see REMARKS, pages 9-12 and Claim amendments, filed 26 February November 2007, with respect to Rejections based on Scope of Enablement for Routes of Administration are found persuasive. Therefore the examiner withdraws this portion of his Rejection against claims 1-56.

Applicant's arguments, see REMARKS, page 12 and Claim amendments, filed 26 February November 2007, with respect to Rejections based on Scope of Enablement for HIV and SIV Vaccines are found persuasive, because the claim amendments have removed references to HIV and SIV antigens. Therefore the examiner withdraws this portion of his Rejection against claims 1, 4, 5, 9-10, 16-17, 24, 28-29, 32, 36, 40-41, 44-51.

In conclusion, the examiner has withdrawn all rejections to the instant application, based on 35 USC 112, first paragraph.

Response to Arguments - Claim Rejections 35 USC § 102

Applicant's arguments regarding rejection of claims 1, 4, 8, 14, 16-17, 27 and 30-31 as being anticipated by Dyall-Smith et al. under 35 USC 102(b), see REMARKS, pages 12-13 and Claim amendments, filed 26 February November 2007 have been fully considered but they are not persuasive.

The applicant essentially argues that the claim amendments directed to eliciting an immune response following administration of a plasmid vector encoding an influenza virus antigen or rotavirus antigen is sufficient to overcome the teachings of Dyall-Smith et al. (US-5,332,658). The applicant suggests that the viral vectors utilized by Dyall-Smith et al. no longer meet the limitations of the amended claims and state that Dyall-Smith et al. "does not disclose administration of plasmid DNA to induce immune responses" (page 13, last paragraph) and therefore does not anticipate the claims of the instant application.

Contrary to the applicant's argument, Dyall-Smith et al. do indeed teach immunizing a vertebrate with a plasmid comprising a rotavirus antigen. Dyall-Smith et al. teach "the isolated gene encoding all or part of the VP7 protein of human [rotavirus] serotype 4...inserted into an appropriate expression vector, such as a bacterial plasmid...for expression of the corresponding polypeptide in host cells" (col.2, lines 12-15). Dyall-Smith et al. further teach, "depending upon the type of expression vector utilized, the VP7 protein...may accumulate in a host cell, be excreted from the host cell...or may accumulate in the outer membrane of the host cell or on the cell surface of the host cell" (col.2, lines 25-30). Dyall-Smith et al. go on to teach "suitable

microorganism expressing the major protein of human rotavirus serotype 4...on the cell surface will, on administration, enter the intestine, invade the lining of the gut...causing the production of protective antibodies in situ" (col.2, lines 62-68). Therefore, the method of Dyall-Smith et al. clearly anticipates a plasmid-based vaccination against rotavirus, as claimed in the instant claims.

Therefore, the examiner maintains his rejection of claims 1, 4, 8, 14, 16-17, 27 and 30-31 as being anticipated by Dyall-Smith et al. under 35 USC 102(b).

Applicant's arguments regarding rejection of claims 1-4, 6, 11-23, 25, 30-35, and 42-43, as being anticipated by Eppstein et al. (US-5,049,386) under 35 USC 102(b), see REMARKS, pages 14-15 and Claim amendments, filed 26 February November 2007 have been fully considered but they are not persuasive.

The applicant argues that the Eppstein et al reference does not anticipate the use of "DNA-containing compositions for inducing immune responses" (page 14, parag.3). Particularly, the applicant suggests that the vaccines taught by Eppstein et al. encompass only protein-based antigens. In addition, the applicant argues that the use of DNA-lipid compositions is only confined to treating genetic disorders and replacing factors in the body such as hormones, blood coagulation factors, and enzymes. (Remarks, page 15, parag.2).

Contrary to the applicant's argument, Eppstein et al. do suggest a DNA vaccine. Clearly, Eppstein et al. teach liposome compositions comprising "plasmids containing...sequences to yield the corresponding expressed products (e.g. proteins and peptides)" and "intracellular delivery...in the whole organism" (col.10, lines 27, 32-33, 43-44). Eppstein et al. teach that the delivery of formulations of "DNA include but ***are not limited to*** hormone replacement therapy...and the like" (col.10, lines 56-62, emphasis added). Eppstein et al. also teach that "an antigen is any substance to which an organism can elicit an immune response" (col.6, lines 30-31), suggesting that plasmid DNA could be encompassed by this definition. Eppstein et al. further teach "regarding vaccine administration, to achieve the desired immune response, the antigen in the formulation comprising a compound of Formula I is administered to an animal or mammal" (col.15, lines 7-10). The teachings of Eppstein et al. encompass gene therapy methods which express proteins and peptides from plasmids and nothing in the teachings of Eppstein et al. specifically exclude plasmid-based vaccines. Furthermore, the teachings of Eppstein et al. do not limit the vaccine compositions to solely protein based vaccines. Further, there is no contrary teaching in Eppstein et al against the use of DNA vaccines. Additionally, the compositions of Eppstein encompass plasmid DNA which is administered to the lung (col.20, line 43). Because the introduction of protein-expressing plasmids into the lung would induce an immune response, the examiner asserts that the Eppstein et al. reference anticipates the instant claims.

Therefore, the examiner maintains his rejection of claims 1-4, 6, 11-23, 25, 30-35, and 42-43, as being anticipated by Eppstein et al. under 35 USC 102(b).

Response to Arguments – Obviousness Double Patenting

Applicant's arguments, see REMARKS, page 16 and Claim amendments, filed 26 February November 2007 have been fully considered but they are not persuasive.

Because the applicant intends to await indication that the present claims are in condition for allowance before filing a terminal disclaimer, and there are still rejected claims, the examiner maintains his rejection of claims 1-4, 6-7, 11-14, 16-22, 25-26, 30-31, 52-56 as being unpatentable over claims 1-19 of US-5,643,578.

In addition, the examiner would like to remind the applicant that this rejection is not a Provisional Obviousness Double Patent rejection that would entitle the applicant to hold in abeyance a response to the rejection.

In this case, the ODP was over an issued US Patent, see MPEP 714.02[R-3](b):

> (b) In order to be entitled to reconsideration or further examination, the applicant or patent owner must reply to the Office action. The reply by the applicant or patent owner must be reduced to a writing which distinctly and specifically points out the supposed errors in the examiner 's action and must reply to every ground of objection and rejection in the prior Office action. The reply must present arguments pointing out the specific distinctions believed to render the claims, including any newly presented claims, patentable over any applied references. ***If the reply is with respect to an application, a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated.*** The applicant 's or patent owner 's reply must appear throughout to be a bona fide attempt to advance the application or the reexamination proceeding to final action. A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 37-39 are dependent from canceled claim 36. There is insufficient antecedent basis for this limitation in the claim. If the base claim has been canceled, a claim which is directly or indirectly dependent thereon should be rejected as incomplete. (MPEP 608.01(n)). Claims 37-39 will not be examined further on the merits in this Office action due to this unclear dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 8, 11-12, 14, 16-17, 19, 27, and 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Dyall-Smith et al. (USPat-5,332,658).

Claims 1 and 16 are directed to methods of immunizing a vertebrate against a rotavirus using a plasmid vector comprising DNA encoding a rotavirus antigen operatively linked to a DNA promoter, which elicits a humoral and/or cell-mediated immune response against the antigen. Claim 4 is directed to the limitation that the method is capable of eliciting a protective immune response. Claim 24 is directed to the

limitation that the infectious agent is a virus. Claims 8 and 27 are directed to the further limitation that the virus is a rotavirus. Claims 11-12 and 30-31 are directed to the limitations of delivery to a "human mammal."

Dyall-Smith et al. teach "human rotavirus gene encoding the major outer capsid glycoprotein (VP7) of the human rotavirus" (abstract). Dyall-Smith et al. teach "the isolated gene encoding all or part of the VP7 protein of human [rotavirus] serotype 4...inserted into an appropriate expression vector, such as a bacterial plasmid...for expression of the corresponding polypeptide in host cells" (col.2, lines 12-15). Dyall-Smith et al. further teach, "depending upon the type of expression vector utilized, the VP7 protein...may accumulate in a host cell, be excreted from the host cell...or may accumulate in the outer membrane of the host cell or on the cell surface of the host cell" (col.2, lines 25-30). Dyall-Smith et al. go on to teach "suitable microorganism expressing the major protein of human rotavirus serotype 4...on the cell surface will, on administration, enter the intestine, invade the lining of the gut...causing the production of protective antibodies in situ" (col.2, lines 62-68). Although not a method administration as direct as intramuscular injection of a plasmid, the method of Dyall-Smith et al. clearly anticipates a plasmid-based vaccination against rotavirus, as claimed in the instant claims.

Dyall-Smith et al. teach rotavirus antigens that "elicit protective immunity." (column 1, line 39). It is inherent that protective immunity of a vaccine would have produced a humoral and/or cell-mediated immune response. It is also inherent that the plasmid vector vaccine of Dyall-Smith et al. would have a promoter, in order to produce

a rotavirus peptide and subsequent immune response. Dyall-Smith et al. intend to use their vaccine for humans, as described in their background material, "In many third world countries rotavirus infection causes significant infant mortality. The World Health Organization has recommended that a vaccine against human rotavirus be developed as soon as possible" (column 1, lines 21-25).

The pUC18 and pBR322 plasmid expression vectors used by Dyall-Smith, et al. utilize *lac* promoter to drive the expression of VP7. This promoter is of non-retroviral origin, as required by the limitations of claims 2, and 17.

Claim 14 is directed to the further limitations of "physiological acceptable carrier" and "mucosal surface of the vertebrate". Claims 14 and 17 are directed to the further limitation of administration to "mucosal surface." Dyall-Smith et al. teach "[plasmid-containing] bacterial..:.vaccines may employ...bacterial dispersed in a pharmaceutical diluent such as a liquid suitable for oral administration" (column 3, lines 5-7).

Accordingly, Dyall-Smith et al. anticipated the instant claims.

Claims 1-4, 6-7, 11-12, 14, 16-19, 25-26, 30-31, and 52-56 are rejected under 35 U.S.C. 102(b) as being anticipated by Pistor et al. (Klin Wochenschr. 1988. 66:110-116).

Claims 1 and 16 are directed to methods of immunizing a vertebrate against a rotavirus using a plasmid vector comprising DNA encoding an influenza antigen

operatively linked to a DNA promoter, which elicits a humoral and/or cell-mediated immune response against the antigen. Claim 4 is directed to the limitation that the method is capable of eliciting a protective immune response. Claim 24 is directed to the limitation that the infectious agent is a virus. Claims 6-7 and 25-26 are directed to the further limitation that the virus is influenza. Claims 11-12 and 30-31 are directed to the limitations of delivery to a "human mammal." Claims 52-56 are directed to methods of administering plasmid vectors comprising influenza genes and further from various subtypes and subgroups of influenza.

Pistor et al teach "expression of foreign protein molecule on the *E.coli* bacterial surface has been achieved through hybrid plasmid construction of fusion proteins using outer membrane protein *ompA* as a carrier system" (abstract). Influenza virus hemagglutinin fusion proteins, in particular were used (abstract). Pistor et al. also teach "Expression of foreign protein molecules on bacterial outer membranes according to the procedure presented here appears to have the potential of a convenient antigen-presentation technique.... antigen presentation on bacterial surfaces might be useful for vaccination purposes, e.g., for enteric viral antigens." (page 115, Discussion, parag.2). Pistor et al. teach expression of influenza hemagglutinin subtype H3 (page 111, parag.1).

Accordingly, Pistor et al. anticipated the instant claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

No claims are allowed.

Examiner Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Scott Long** whose telephone number is **571-272-9048**. The examiner can normally be reached on Monday - Friday, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Joseph Woitach** can be reached on **571-272-0739**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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